

TABLE II-1. Continued

Percent of Capital Spending Provided by Federal Government <u>a/</u>	Percent in Poor Condition	Percent in Fair Condition
91	8.2	34.1
70	8.9	51.5
25	13.9	62.4
20	10.7	59.8
<u>70</u>	<u>10.5</u>	<u>15.5 d/</u>
50	11.5 <u>e/</u>	57.2 <u>e/</u>
<u>f/</u>	<u>f/</u>	<u>f/</u>
<u><u>f/</u></u>	<u>33.4</u>	<u>27.4</u>
<u>f/</u>	<u>f/</u>	<u>f/</u>

- a. U. S. Department of Transportation, Final Report on the Federal Highway Cost Allocation Study (May 1982), p. iv-14. These estimates exclude maintenance.
- b. Excludes Interstate mileage.
- c. Not applicable because vehicle miles are the same as for roads.
- d. These bridges do not have adequate capacity for existing traffic or do not meet current design standards despite adequately sound structure.
- e. Excludes bridges.
- f. Data not available.

Interstate system has yet to be completed. During the 1970s, highway construction costs rose even faster than inflation in general. At the same time, revenues from motor fuel taxes leveled off, as high energy costs slowed the growth in vehicular travel and encouraged the use of more fuel-efficient vehicles.^{2/} The financial pressures resulting from these influences have forced many states to defer highway repairs. Even though almost half the states have raised their taxes on motor fuel in the past two years, income from such measures has not been enough to make up for purchasing power already lost to inflation.

Repair Needs of the Interstate System. The typical Interstate highway is designed to last for 20 years before it requires major rehabilitation. With construction on the Interstate system having begun in 1956, more than 41 percent of the system has already reached this milestone, and 75 percent of the system will have reached it by 1990. Data from the Department of Transportation's Federal Highway Administration (FHWA) show that 8 percent of Interstate mileage was in poor condition in 1981, unchanged from 1978 but up from 3 percent in 1975 (see Table II-2).^{3/} In fact, pavement condition as a function of age shows a distinct pattern; the rate of deterioration tends to accelerate rapidly as roads enter the last quarter of their design lives (see Figure II-1). This means that, even as the Interstate system approaches completion, the rate of deterioration is rising.

Repair Needs of Other Federal-Aid Roads. The Primary, Secondary, and Urban systems of the Federal-Aid network also face problems of deferred repair. Though the fraction of these roads rated as being in poor condition remained relatively low in 1981, more than half of the Primary, Secondary, and Urban systems were in fair condition. Without more remedial work, an increase in roads rated poor is likely. The condition of roads not included in the Federal-Aid System is probably similar to or worse than the Secondary and Urban systems.

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2. Discussion of market swings toward fuel-efficient vehicles can be found in Congressional Budget Office, Fuel Economy Standards for New Passenger Cars After 1985 (December 1980).
 3. Deteriorated roads are concentrated in a few states, with Michigan, Kansas, New Mexico, Wisconsin, and Missouri reported to have more than 50 percent of their Interstate roads in fair condition. Roads are rated by the FHWA on a scale of one to five based on a visual inspection of their condition. For example, a new road should receive a five and a good road four, while a road in fair condition rates a three. A poor road (two or worse for most roads and 2.5 or worse for Interstates) is one that cannot safely be used at its design speed.

TABLE II-2. RETROSPECTIVE OF PAVEMENT CONDITIONS ON
THE FEDERAL-AID HIGHWAY SYSTEM FROM 1981

System	Condition of Road (Percent in 1981)		Change in Road Condition (Percentage Points)			
			From 1978		From 1975	
	Poor	Fair <u>a/</u>	Poor	Fair	Poor	Fair
Interstate						
Rural	8	34	0	+2	+5	+4
Urban	9	35	+1	0	+3	-1
Primary <u>b/</u>						
Rural	9	50	+2	-6	0	-2
Urban	9	55	+2	-4	+1	-4
Secondary <u>c/</u>	14	62	-1	-4	0	-2
Urban <u>d/</u>	11	60	-1	-5	0	-5

SOURCE: Congressional Budget Office from data supplied by Federal Highway Administration.

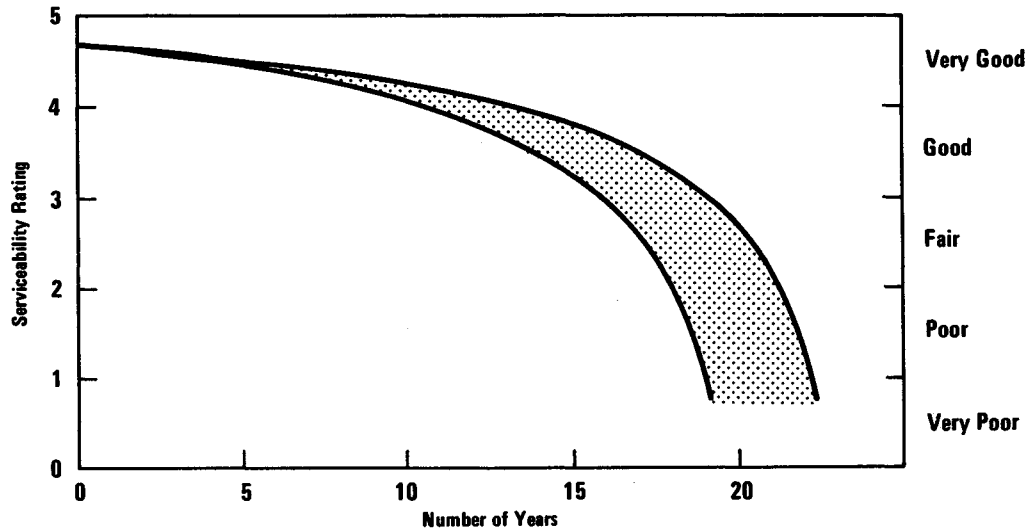
- a. The definition of a road in fair condition is not clear and other interpretations could result in inclusion of one-third or so fewer roads in this class.
- b. Data for arterial roads.
- c. Data for rural collector roads.
- d. Data for urban collector roads.

The FHWA has identified 23 percent of the nation's 574,000 bridges as structurally deficient--roughly 10 percent of all bridges on the Federal-Aid System and one-third of other bridges. ^{4/} Most of these deficient bridges

- 4. See Federal Highway Administration, Highway Bridge Replacement and Rehabilitation Program, Third Annual Report to the Congress (March 1982).

Figure II-1.

Pavement Conditions as a Function of Age (for highways designed to last 20 years)



SOURCE: Congressional Budget Office from Federal Highway Administration data.

NOTE: Road serviceability measured on a scale of zero to five according to Federal Highway Administration ratings.

are still safe for light vehicles, but large trucks sometimes must be rerouted. Though only one-fifth of all structurally deficient bridges are on the Federal-Aid System, they tend to be the larger, more expensive ones.

Interstate Completion. As conceived, the Interstate System would have been completed in 1972, well before the first cycle of major repairs was to begin. That original goal has not been met. More than 96 percent of the system's planned 42,900 miles are now open to traffic, and the Congress has set a target date of 1990 for completion of the remaining 1,700 miles. The cost to complete this system--\$36.3 billion--remains high, particularly because much of the mileage to be built is in urban areas, where construction is especially costly. ^{5/}

5. Urban roads tend to be more expensive because land costs are higher in cities and because space and time confinements make construction difficult.

Since the Interstate system was conceived, its definition has grown to include many roads that are of greater interest to states and localities than to the nation as a whole. Most of the roads yet to be built would serve commuter traffic. Only about half the remaining miles (and one-third the cost) can be considered primarily national routes needed for interstate travel. ^{6/}

Costs of Neglect

Keeping roads in good repair is critical because, as road conditions worsen, overall costs of using the roads increase substantially. Vehicle maintenance costs rise as roads become rougher, slower speeds lengthen travel times, travel distances grow as people reroute to avoid bad stretches, and accidents become more numerous. Though these costs cannot be calculated precisely, one recent study has found that operating costs on a road in poor condition may be 15 percent to 29 percent higher than the costs of using a road in good condition (see Table II-3). ^{7/} Although these are approximate estimates, poor roads clearly impose substantial costs on their users. In addition, road conditions deteriorate at increasing rates if needed repairs are not made. For example, about three-quarters of pavement deterioration occurs in the last two or three years of a road's design life. As a result, the long-run cost to the government can increase as repairs continue to be postponed.

Meeting the needs outlined above--repair of Interstate routes, repair of other Federal-Aid highways, and completion of the nationally important parts of the Interstate highway system--would require substantial funding. Altogether, the costs of attending to them would come to about \$23.2 billion a year. As costs are now shared between the federal and state governments, the federal government would be responsible for \$13.1 billion a year--a 50 percent increase over the federal spending in 1982 but only slightly more than the sums authorized for 1983-1986 under the Surface Transportation Assistance Act of 1982.

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6. See Congressional Budget Office, The Interstate Highway System: Issues and Options (June 1982).
 7. See Federal Highway Administration, Office of Highway Planning, Vehicle Operating Costs, Fuel Consumption, and Pavement Type and Condition Factors, Final Report (June 1982), Appendix A.

TABLE II-3. INCREASES IN OPERATING COSTS AS A FUNCTION OF PAVEMENT CONDITION, BY VEHICLE TYPE (In percents)

Pavement Condition	Small Auto	Two-Axle Truck	Five-Axle Truck
Very Good	0.0	0.0	0.0
Good	2.0	1.1	2.5
Fair	11.0	6.1	10.9
Poor	29.0	15.3	26.6
Very Poor	38.0	22.2	39.8

SOURCE: Congressional Budget Office from data in Federal Highway Administration, Office of Highway Planning, Vehicle Operating Costs, Fuel Consumption, and Pavement Type and Condition Factors, Final Report (June 1982), Appendix A.

NOTE: Excludes labor costs. Includes fuel, oil, maintenance and repair, and depreciation. Cost changes assume 55 miles per hour and no grades.

CURRENT POLICY IN HIGHWAYS

For 1983, about 85 percent (\$10.7 billion) of the \$12.7 billion available for federal highway spending (administered by the Department of Transportation) was allocated to programs for the Federal-Aid System. The remaining \$2.0 billion serves a wide variety of purposes, from regional development to safety-related grants. In recent years, the total funding for these miscellaneous programs has declined.

Evaluation of the Federal Role

Since the modern highway program began in 1916, federal highway spending has passed through several cycles.^{8/} The underlying rationale for federal involvement in highways rests on the need for a coordinated national road network to facilitate the nation's commerce. Though some parts of this network could be self-supporting as toll roads, the network as a whole requires government support. Over time, the federal program expanded with the addition of new programs, and the mileage included in the Federal-Aid System grew from 169,000 miles and 5 percent of the nation's roads in 1923 to 820,000 miles and more than 20 percent of the route-miles at present.

In 1956, the Congress created the Highway Trust Fund to provide a stable way to finance construction of the Interstate Highway System. Federal user fees were increased, with the most important tax--that on motor fuel--going from 1.5 cents per gallon in 1956 to 3 cents in 1957 and 4 cents in 1959. In contrast to the rest of the highway network, in which states have broad latitude concerning which routes to include, the federal government specifies which routes are eligible to be part of the Interstate highway program, and it provides the funds to build those routes on highly attractive terms.

Origins of the Matching System and the Status Quo

In 1956, in recognition of their importance for national growth, the Interstate routes became eligible for 90 percent federal financing, rather than the 50 percent federal support that the other Federal-Aid roads received. In 1974, the federal share for non-Interstate projects was increased from 50 percent to 70 percent, and four years later, to 75 percent for most programs. Nevertheless, because state and local governments have spent more than they have had to just to match federal dollars, the federal share of overall highway spending has been substantially less, averaging about 30 percent for the last 25 years.^{9/} State governments now supply about half the spending, with cities, counties, and other local governments providing the remaining 20 percent.

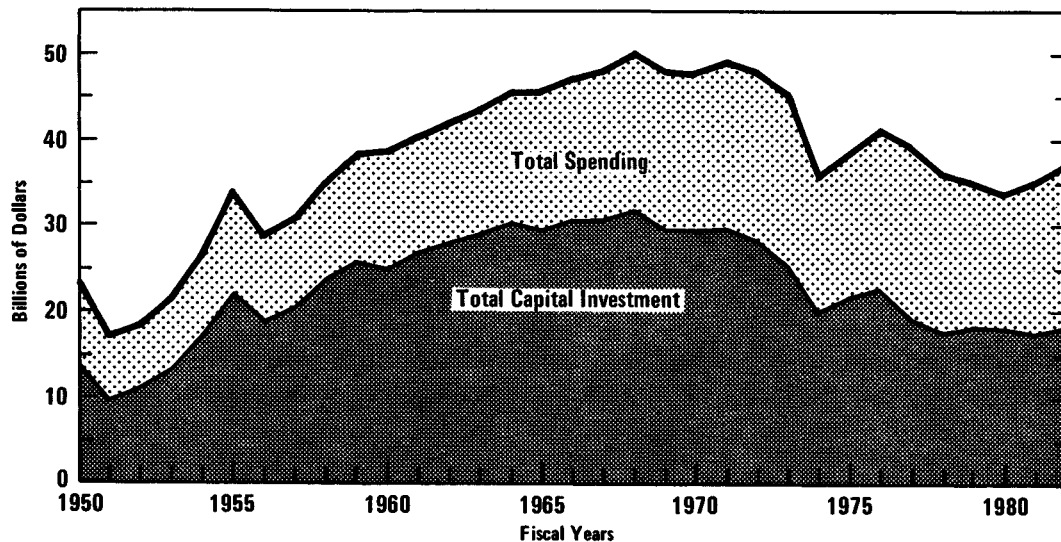
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8. For more details, see Congressional Budget Office, Highway Assistance Programs: A Historical Perspective (February 1978).
 9. Unless states increase their spending as well, the major jump in federal spending called for by the Surface Transportation Assistance Act of 1982 may cause the first major shift since the late 1950s.

Today, federal funds are concentrated on specific roads and activities, and they account for about half of the spending for construction and major repair of the Federal-Aid highway system. Most state and local spending goes for roads that are not included in any of the various federal systems sketched above; much goes toward more locally oriented federal roads (mainly the Secondary and Urban systems) and for routine maintenance--pothole filling and grass mowing, for example--on all road systems.

In 1982, all three levels of government together spent about \$37 billion on highways, of which about half represents capital spending for new construction and major repair work (see Figure II-2). In terms of purchasing power, this level of spending is equivalent to that of the late 1950s, shortly after the start of the federal Highway Trust Fund. Public spending on highways peaked in 1969 at close to \$50 billion (expressed in 1982 dollars).

Figure II-2.

Capital Investment as a Proportion of Total Public Highway Spending, 1950-1982



SOURCE: Congressional Budget Office from Federal Highway Administration data.

The bulk of government spending on highways is financed by different taxes on highway users. The most important of these are the taxes on motor fuel--now 9 cents a gallon at the federal level under the 1982 legislation and an average of about 10 cents a gallon at the state level. More than

95 percent of federal highway spending is financed by users, and about 60 percent of state and local spending also comes directly from users.

Estimated Needs Under Current Policy

According to FHWA estimates, eliminating all sections of poor road from the Interstate highways and keeping the system in repair would cost around \$2.8 billion a year through the rest of the 1980s. The federal share, matching 90 percent of these costs, would average \$2.5 billion (see Table II-4).

Over the rest of this decade, the total costs to all levels of government of preventing further deterioration in the Primary, Secondary, and Urban systems are estimated at \$27, \$22, and \$18 billion, respectively. ^{10/} These sums include the cost of adding road capacity to accommodate expected growth in traffic; overall, roughly one-third represents new construction. If federal support for these programs continues in the same proportion to total spending as in the past, then the annual federal share of spending for these roads over the next four years would average \$2.7 billion, \$0.6 billion, and \$0.5 billion for the Primary, Secondary, and Urban systems, respectively. ^{11/}

Replacing or rehabilitating all the nation's deficient bridges over an unspecified period would cost about \$40.5 billion. ^{12/} About half of this sum (\$20.1 billion) would go for bridges on the Federal-Aid System, including \$8.7 billion for bridges on the Primary and Interstate systems. The costs to replace or rehabilitate these bridges by 1990 would total about \$2.5 billion a year. At present, the federal government pays for about 70 percent of the costs of bridge repair and replacement on the Federal-Aid System, so \$1.8 billion would be required as the federal share. ^{13/}

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10. Unpublished estimates from Federal Highway Administration.
 11. For the Secondary and Urban roads, this assumes that the federal government would pay about 20 percent of total capital spending, and that it would pay about 70 percent of the total for the Primary system.
 12. See Federal Highway Administration, Highway Bridge Replacement and Rehabilitation Program, Third Annual Report to the Congress (March 1982).
 13. See General Accounting Office, Better Targeting of Federal Funds Needed to Eliminate Unsafe Bridges (August 1981).

TABLE II-4. CUMULATIVE COSTS ASSOCIATED WITH MAJOR NATIONAL HIGHWAY NEEDS OF THE FEDERAL-AID SYSTEM (1983-1990)

Area of Need	Effective Federal Share of Spending (In percent) <u>a/</u>	Average Annual Authorizations (In billions of dollars)		
		Total Estimated Needs	Federal Share of Estimated Needs	State and Local Share of Estimated Needs
Complete Interstate System by 1990	90	4.5	4.1	0.4
Interstate Repair	90	2.8	2.5	0.3
Interstate Reconstruction	25 <u>b/</u>	3.6	0.9	2.7
Primary	70	3.9	2.7	1.2
Secondary	20	3.2	0.6	2.6
Urban	20	2.7	0.5	2.2
Bridge Repair	<u>70</u>	<u>2.5</u>	<u>1.8</u> <u>c/</u>	<u>0.7</u>
Total <u>d/</u>	56	23.2	13.1	10.1

SOURCE: Congressional Budget Office from unpublished data provided by the Federal Highway Administration, except as noted below.

- a. Department of Transportation, Final Report on the Federal Highway Cost Allocation Study (May 1982), p. iv-14. These represent federal share of highway spending after accounting for state-only projects.
- b. Congressional Budget Office assumption.
- c. Federal Highway Administration, Highway Bridge Replacement and Rehabilitation Program, Third Annual Report to the Congress (March 1982). Assumes an eight-year program and is restricted to the Federal-Aid System.
- d. Excludes Interstate transfer grants for highways, safety, recreational roads, and roads off the Federal-Aid System. Needs for roads and bridges off the Federal-Aid System are difficult to estimate but could reach \$4 billion to \$5 billion a year.

EFFICIENCY OF CURRENT HIGHWAY SPENDING

In size, the current federal commitment is roughly in line with the needs for highway infrastructure. Federal money could be better targeted to the areas of greatest need, however. For example, the most significant national highway problem appears to be the deteriorating condition of the Interstate System and certain other important parts of the Federal-Aid network. Yet large sums continue to be devoted to construction of Interstate highways, even though less than half of the remaining cost is related to completing an interconnected system of intercity roads. Similarly, a large portion of the \$2.3 billion in federal funds for the Interstate "4R program" (repair, resurfacing, restoration, or reconstruction) will be used for reconstruction work only. ^{14/} This is an area of considerably lower federal priority than repairing the completed system.

FEDERAL STRATEGIES TO IMPROVE HIGHWAY INVESTMENT

Of the three general strategies outlined in Chapter I--greater use of federal user fees, better targeting of federal dollars, and limiting federal funding to areas of clear national need--the latter two are most applicable. By and large, current federal outlays are already recovered from users, and charging highway users for their congestion and environmental costs presents technical and political problems. This does not mean that the current federal highway taxes could not be made more equitable--taxes on heavy trucks in particular are too low by about one-third. But any shift in truck taxes would be unlikely to change the overall level of demand for highways; further, since taxes are such a small part of truck operators' costs, higher taxes might not cause much change in the way highways are used. ^{15/}

Instead of continuing current spending patterns, two broad options illustrate possible ways to improve the alignment of federal funds and highway needs: a retargeting option that would adjust federal authorization

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14. The term reconstruction is a misnomer, since none of the projects involves the repair of existing highways. Rather, reconstruction refers to special types of new construction--added lanes and interchanges, for example.
 15. Highway user taxes account for less than 2 percent of total trucking costs, which include the costs of the driver and distribution costs. Even full recovery of the costs that heavy trucks impose on federal highways would increase total costs by less than 1 percent.

levels to match needs more closely; and a restricted federal role in which support would be concentrated exclusively on the Interstate and Primary systems.

A Retargeted Program

A retargeted program's greatest effect would be to shift more funds to repair of the Interstate System (see Table II-5). Such action could yield a marked improvement in road conditions. This could be achieved by lowering the 90 percent federal match for so-called reconstruction projects--mostly locally oriented additions to Interstate roads that do not involve repair work. The current repair program authorization of \$2.3 billion a year appears inadequate, in large part because repair funds can also go toward other uses. But funds for completion of the Interstate System could be decreased from \$3.6 billion to \$1.7 billion by completing only those roads of clearly national significance.

A total of \$2.8 billion a year is needed for Interstate repair and resurfacing alone, with an additional \$3.6 billion in demand for reconstruction. Other major changes could change authorization levels to meet the estimated level of needs shown in Table II-4. These could include increasing average annual authorizations for the Primary system from \$1.9 billion a year to \$2.7 billion, and for bridges from \$1.6 billion to \$1.8 billion.

Implications for the Federal Budget. This option would require slightly less in funding than the current level of spending, resulting in a saving of about \$1.3 billion a year. But if no change were made in the extent of the Interstate System, a total of \$4.1 billion a year would be required--\$2.4 billion more than CBO has assumed for this option. This would require a further tax increase of about 1 cent per gallon.

Implications for State and Local Governments. This revised program, because it would involve the largest commitment of funds to highway repair and construction, would not shift major cost burdens to state and local governments. Indeed, it would provide considerable aid for state highway departments, because it would continue federal funding for Secondary and Urban roads at a high level. Because state and local governments already build projects on these systems using 100 percent state funds, most states would be readily able to furnish adequate funds to match federal spending. Without substantial increases in their highway taxes, however, the states would be unable to increase their highway spending generally in parallel with the recent federal increase.

TABLE II-5. FEDERAL HIGHWAY PROGRAM UNDER THREE
 OPTIONS--AVERAGE ANNUAL AUTHORIZATION, 1983-1986
 (In billions of dollars)

Program	Current Program	Better Targeted Program	Restricted Federal Role
Interstate Completion	3.6	1.7 <u>a/</u>	1.7 <u>a/</u>
Interstate Repair	2.3	2.5	2.5
Interstate Reconstruction		1.6	1.6 <u>a/</u>
Primary	1.9	2.7	2.7
Secondary	0.6	0.6	0.0
Urban	0.7	0.5	0.0
Bridges	1.6	1.8	0.8 <u>b/</u>
Other <u>c/</u>	<u>2.0</u>	<u>0.0</u>	<u>0.0</u>
Total	12.7	11.4	9.3

SOURCE: Congressional Budget Office from unpublished data from Federal Highway Administration, except as noted below.

- a. Assumes intermediate Interstate construction option from Congressional Budget Office, The Interstate Highway System: Issues and Options (June 1982).
- b. Includes only Interstate and Primary systems' share of bridge program.
- c. Includes Interstate transfer grants, safety programs, and development highways.

Restricted Federal Role

Though federal, state, and local highway interests often overlap, the extent of national interest varies considerably among the various highway programs. The Congress might therefore wish to consider a shift in federal and state and local government highway roles. If existing federal highway resources were concentrated exclusively on roads of greatest national importance, aid for all but the Interstate and Primary systems, along with their related bridge projects, could be dropped (see Table II-5). Even with somewhat reduced total federal expenditures, this option could permit completion of the nationally important portions of the Interstate System by 1990 and would still provide adequate funds for repair of the Interstate and Primary systems.

The predominant federal interest in the nation's highway system is reflected in those roads that link activities--and hence commerce--in different states; overall, these roads account for about 68 percent of the federal programs. The unique scope of the Interstate System gives rise to an exceptional federal interest in this program compared with other highway activities. Similarly, Primary routes are also a major federal concern: in rural areas, these routes carry twice as much interstate traffic as does the Interstate System. A second group of programs--the rest of the Federal-Aid System--can be considered a form of intergovernmental reimbursement. Federal spending accounts for only about 20 percent of total government capital spending on the Secondary and Urban systems. States carry the bulk of the burden for these systems, and federal aid has relatively little influence on the total amounts spent. These programs account for another 16 percent of federal highway spending. The final group of programs represent a mix of safety, economic development, and special regional concerns of particular interest to state and local governments, which are in the best position to make effective project choices. Total costs for these federal programs come to 16 percent of spending.

Implications for the Federal Budget. This option would require \$3.4 billion a year less than would current policies. If highway taxes were not changed, the federal deficit could be narrowed by about \$3.4 billion a year. Alternatively, federal highway tax revenues could be reduced by \$3.4 billion (with fuel taxes cut by 3 cents a gallon), leaving the states the opportunity to raise their taxes to compensate for lost federal dollars.

Implications for State and Local Governments. Such a shift would place the full burden of financing Secondary and Urban roads on state and local governments. To accommodate the shift, they would be forced to increase taxes or spend less per mile of road in their care. This burden could be eased by reducing the federal tax on motor fuel by 3 cents per

gallon, permitting the states to raise their tax revenues by \$3.4 billion a year--enough to replace fully the reduced federal aid. As the federal tax was phased out, state and local governments could increase their own highway taxes to finance, on a permanent basis, the programs dropped by the federal government. The federal government would continue to finance Interstate and Primary roads, and at a higher level than they now do. A potential problem is that, as the states increased their own user fees, there is no assurance that the resulting distribution of cost recovery would either be uniform among the states or applied in the most economic manner.

CHAPTER III. PUBLIC TRANSIT

While local fiscal constraints have forced many transit authorities to neglect the worsening physical conditions of older-generation rail systems, high federal capital grants (80 percent of investment costs through 1982, now 75 percent) have induced some cities to start new capital-intensive systems, particularly rail. (By and large, the transit bus fleets are in adequate condition.) The allocation of federal grants appears to favor urban areas with less pressing needs rather than the most transit-dependent cities. Not enough of the \$3.7 billion available for distribution as federal capital grants goes toward mounting repair and rehabilitation needs, although the overall sum appears ample to meet transit needs as estimated by CBO at \$3.6 billion a year through 1990. Adjustment in federal policies to improve the cost effectiveness and targeting of spending could permit transit needs to be met within current federal spending, and might even allow a reduction in the penny of the new tax on motor fuel that goes to transit. Such changes could include lowering the federal matching ratio, revising the distribution formula to favor cities that rely most heavily on transit, disbursing federal monies in transit block grants with few federal stipulations as to their use, and permitting experimentation with nontraditional modes.

THE PROBLEMS IN MASS TRANSIT

From a national perspective, public transit has accounted for only a small share of all work-related travel, declining from 9 percent in 1970 to 6 percent in 1980. Cars carrying only a driver accounted for 64 percent of all work trips in 1980, while carpools and van pools together made up 20 percent. The remaining 10 percent represent people who walk, ride bikes, or work at home.^{1/} But the older, more densely populated cities,

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1. See Philip N. Fulton, "Public Transportation: Solving the Commuting Problem?" U.S. Bureau of the Census, presented at Transportation Research Board Annual Meeting (January 1983).

such as New York City, Chicago, Philadelphia, and Boston, depend heavily on their public transit systems to handle daily commuter traffic and downtown circulation. In New York City, the most transit-dependent of all U.S. cities, public transportation handles more than half of all work trips and three-fifths of all trips made within the city on a typical day.^{2/} Of the roughly 8 million mass transit trips made in the United States in 1981, 70 percent were by bus and the rest on rail systems, which include "heavy rail" (subways), "light rail" (trolley), and commuter railroads. Fully one-third of these trips were concentrated in the New York metropolitan area.

Two factors shape the need for future investment in mass transit: deterioration of existing facilities, and demand for new capacity. Over the last decade, rapidly growing operating deficits have forced many cities to defer normal maintenance.

Deterioration of Existing Facilities

The condition of the nation's public transit systems varies widely depending on age, patterns and intensity of use, levels of maintenance, and external factors such as climate. Various aging transit system components--including rail track, buses and rail cars, and bus and rail car garages--will probably require rehabilitation or replacement in the coming decade. Physical deterioration is especially severe on the older rail transit systems of New York, Chicago, Philadelphia, and Boston. Except for vehicle replacement, most of these problems represent a backlog of postponed needs rather than a recurring or new problem.

Though the nation's bus fleets are in substantially better condition than they were a decade ago, the relatively short effective life of a transit bus (12 to 15 years) means that the need for steady funding of buses will continue. Aging bus fleets are not a serious financial or physical problem, however; the Department of Transportation's Urban Mass Transportation Administration (UMTA) recently estimated that more than 95 percent of the nation's total bus fleet is less than 20 years old.^{3/} But some bus facilities, such as garages, are old, and these may need to be modernized or replaced sometime in the near future.

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2. See New York City Planning Commission, Capital Needs and Priorities for the City of New York (1982), p. 202.
 3. See Urban Mass Transportation Administration, National Urban Mass Transportation Statistics, Second Annual Report, Section 15 Reporting System (November 1982).

Age alone does not determine the need for bus or subway car replacement; patterns of use are as important a factor. Some New York City buses, for example, show severe wear after just nine years of service, partly because of overloading and use on highly congested, pothole-ridden streets. ^{4/} Inadequate maintenance may also outweigh age as a cause of transit inefficiency. In 1971, the New York City Transit Authority's older subway cars had a breakdown rate of once per 24,000 miles of operation. Today, the failure rate has increased dramatically to once every 6,500 miles, and old and new cars break down with virtually the same frequency. ^{5/}

High failure rates can have important implications for transit authority finances, because ridership--hence fare revenues--is considerably more sensitive to passengers' comfort and convenience than it is to fare levels. ^{6/} Thus, continuing to neglect repair and maintenance needs could result in increased road traffic congestion and wasted fuel, and in greater expenses for businesses and private individuals alike. Over the long term, an area's economic development can suffer. ^{7/} These costs are likely to be concentrated in the older, densely populated cities that depend most on mass transit.

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4. See City of New York, Office of the Comptroller, Rebuilding During the 1980s (May 7, 1979), pp. 187-189, cited in Nancy Humphrey, "Assessing Infrastructure Needs," the Urban Institute (December 1980), pp. 6-7.
 5. See George Haikalis in Committee for Better Transit, Inc., Notes from Underground, Volume 13, Numbers 3 & 4 (June-July 1982), p. 2.
 6. See, for example, Ecosometrics, Incorporated, Patronage Impacts of Changes in Transit Fares and Services, prepared for Urban Mass Transportation Administration (September 1980), and David Lewis, "Estimating the Influence of Public Policy on Road Traffic Levels in Greater London," in Journal of Transport Economics and Policy, volume XI, No. 2 (May 1977).
 7. See the discussion in John R. Meyer and Jose A. Gomez-Ibanez, Autos, Transit, and Cities, 1981, Chapter II ("Traffic Congestion"). The authors conclude that traffic congestion "is **not** a problem that can or should be totally eliminated," however; "the proper policy goal is attenuation" (p. 229). And in The Urban Transportation System: Politics and Policy Innovation (1979), Alan Altshuler notes that no "discernible progress has been made in specifying the relationship between congestion and aggregate economic activity--within any metropolitan area, let alone the nation as a whole" (p. 323).

Demand for Increased Transit Capacity

The second major demand for transit funds is likely to come from the newer, rapidly growing cities that now have no rail transit systems. During the 1970s, the rapid growth in federal funding for transit made possible significant additions to rail transit capacity, and a generous federal match for local investment induced some cities to choose rail over other, less costly transit alternatives. ^{8/} With the addition last year of more funds for transit, many cities (Houston and Los Angeles, for example) have indicated a wish to build new subways.

CURRENT POLICY IN PUBLIC TRANSIT

The federal government's involvement in funding mass transit has been motivated by the perception that, without help, localities cannot afford all the capital investment necessary to build and maintain public transportation systems. In addition, federal involvement has been justified on grounds that transit can help attain several important social and economic objectives. These include easing urban road traffic congestion, saving energy, curbing pollution, and providing a way for people without cars to get to work.

Development of Federal Role

Early in this century, mass transit was dominated by private firms that operated as profitable businesses, including many subsidiaries of firms in related businesses, such as land developers and electric power companies. With the proliferation of private cars after World War II, urban populations and employment, once concentrated in city centers, became more dispersed. As a result, transit ridership declined by about 65 percent between 1945 and 1965, and many privately owned transit companies failed. By the early 1960s, the physical decrepitude resulting from deferred maintenance had reached crisis proportions in most of the remaining private systems. ^{9/} As private investment in transit declined, federal funding began, though on a small scale, in 1963. The main purpose was to allow localities to purchase

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8. See Consad Research Corporation, A Study of Public Works Investment in the United States, for U.S. Department of Commerce, volume III, pp. 69-70 (April 1980).
 9. George W. Hilton, Federal Transit Subsidies, American Enterprise Institute (1974).